5/91
Harlequin Duck
Histrionicus histrionicus

Range:
Harlequin ducks winter along the Pacific Coast from the Aleutian Islands to northern California and along the Atlantic Coast. Harlequins summer/breed from coastal mountains of Alaska to California, along the northern Rocky Mountains to Yellowstone, and along the Atlantic Coast.

Washington Distribution:
Harlequins breed in the Olympic Mountains, the Cascades, and the Blue and Selkirk Mountains. Wintering areas include northern Puget Sound, northern Hood Canal, Strait of Juan de Fuca, San Juan Islands, and the outer coast.

Habitat Requirements:
During the nesting season (April-June) adult harlequin ducks require fast-flowing water with one or more loafing sites nearby, dense shrub or timber/shrub mosaic vegetation on the banks, and an absence of human disturbance (Cassirer and Groves 1989). Harlequins nest on the ground (Bergston 1972). Midstream loafing sites are very important (Cassirer and Groves 1990). Since adult harlequins show fidelity to nest sites, it is unlikely that they will relocate to new nesting areas once they are disturbed (Wallen and Groves 1989).

Broods remain near nesting areas for the first few weeks after hatching then move downstream during the summer (Kuchel 1977, Wallen 1987, Cassirer and Groves 1989). Broods prefer low-gradient streams with adequate macroinvertebrate fauna (Bengton and Ulfstrand 1971). Preferred prey include crustaceans, molluscs, and aquatic insects (Cottam 1939). In general, there is a direct relationship between aquatic plant biomass and macroinvertebrate biomass (Krull 1970). In one study, ninety percent of all brood observations occurred near mature or old growth stands (Cassirer and Groves 1990).

During winter, harlequins forage and loaf along boulder- strewn shores, points, and gravel substrates and in kelp beds. Seventy percent of their prey species occur chiefly on rock substrate and twenty-two percent on gravel substrate (Vermeer 1983). Most wintering harlequins occur within 50 meters of shore in saltwater areas (Gaines and Fitzner 1987).

Limiting Factors:
Low benthic macroinvertebrate biomass limits the number of harlequin ducks and

productivity. Human disturbance discourages nesting at traditional sites and thereby decreases productivity.

Management Recommendations:
Maintain woody debris and riparian vegetation in and adjacent to streams. A 30 meter (100') buffer along nesting streams is necessary to recruit suitable LOD for loafing sites (Murphy and Koski 1989). A larger buffer may be necessary on second growth stands. Logging activity in the riparian corridor should be avoided (Cassirer and Groves 1989). Stream alterations that would cause greater surface runoff, changing water levels, or lower macroinvertebrate levels should be avoided (Kuchel 1977).

To limit disturbance, trails or roads should be farther than 50 meters (165 feet) from streams used by harlequin ducks, and should not be visible from the stream (Cassirer and Groves 1989). Fishing activity should be limited on streams used by nesting harlequins (Wallen 1987). The May through August nesting and brood rearing period are the critical months to reduce disturbance.

References:
Bengton, S. and S. Ulfstrand. 1971. Food resources and breeding frequency of the harlequin duck Histrionicus histrionicus in Iceland. Oikos 22:235-239.

Cassirer, E.F. and C.R. Groves. 1989. Breeding ecology of harlequin ducks (Histrionicus histrionicus) of the Kaniksu National Forest, Idaho. Idaho Department of Fish and Game, Boise.

Cassirer, E.F. and C.R. Groves. 1990. Distribution, habitat use, and status of harlequin ducks in northern Idaho. Idaho Fish and Game.

Cottam, C. 1939. Food habits of North American diving ducks. U.S. Dept. of Ag. Tech. Bull. 643. 140 pp.

Gaines, B.L. and R. Fitzner. 1987. Winter diet of the harlequin duck at Sequim Bay, Puget Sound, Washington. NW Science 61(4):213-215.

Kuchel, C.R. 1977. Some aspects of the behavior and ecology of harlequin ducks in Glacier National Park, Montana. M.S. Thesis. University of Montana.

Krull, J.N. 1970. Aquatic plant - macroinvertebrate associations and waterfowl. J. Wildl. Manage. 34:707- 718.

Murphy, M.L. and K.U. Koski. 1989. Input and depletion of woody debris in Alaska streams and implications for streamside management. N. Amer. J. Fish Mgmt. 9:427-436.

Wallen, R.L. 1987. Habitat utilization by harlequin ducks in Grand Teton National

Park. M.S. Thesis, Montana State University, Bozeman.

Wallen, R.L. and C.R. Groves. 1989. Distribution, breeding biology, and nesting habitat of harlequin ducks in northern Idaho. Idaho Fish and Game.

Key Points:
Habitat Requirements:
· Adults – fast-flowing streams, loafing sites, dense bank vegetation, absence of human disturbance. Broods – low gradient streams with adequate macroinvertebrates. Winter – rocky marine shoreline areas.

Management Recommendations:
· Maintain woody debris, riparian vegetation next to streams, macroinvertebrates. Locate roads and trails further than 165 feet from streams. Manage human disturbance during breeding/brood-rearing season (May-August). Protect rocky shoreline areas used during winter.